Optimized Defects in Band-Gap Waveguides

Abstract of the Invention

Disclosed is a photonic band-gap crystal waveguide having the physical dimension of the photonic crystal lattice and the size of the defect selected to provide for optimum mode power confinement to the defect. The defect has a boundary which has a characteristic numerical value associated with it. The ratio of this numerical value to the pitch of the photonic crystal is selected to avoid surface modes found to exist in certain configurations of the photonic band-gap crystal waveguide. Embodiments in accord with the invention having circular and hexagonal defect cross sections are disclosed and described. A method of making the photonic band-gap crystal waveguide is also disclosed and described.